

## CLAIMS

1-27. (canceled)

28. (new) A method for convolving a first digital signal with a second digital signal, the method comprising:  
providing the first and second digital signals, wherein:  
the first and second digital signals are audio processing signals;  
the first digital signal contains a first set of one or more data values and a second set of one or more data values; and  
the data values in the second set are all zero values;  
identifying a location in the first digital signal of each data value in the first set; and  
generating a convolution of the first and second digital signals as a sum of one or more multiplication products, wherein:  
each multiplication product is generated by multiplying a data value in the first set of the first digital signal by a corresponding data value of the second digital signal; and  
for each multiplication product, the two data values are selected based on the identified location of the data value in the first set of the first digital signal.

29. (new) The invention of claim 28, wherein the step of generating the convolution is implemented without selecting any data value in the second set of the first digital signal.

30. (new) The invention of claim 28, wherein the data values in the first set are all non-zero values.

31. (new) The invention of claim 28, wherein the convolution of the first and second digital signals is part of audio coding processing.

32. (new) The invention of claim 28, wherein the convolution of the first and second digital signals is part of audio decoding processing.

33. (new) The invention of claim 28, wherein the first digital signal is an excitation signal, the second digital signal is an impulse response, and the convolution corresponds to a residual signal.

34. (new) The invention of claim 28, wherein identifying the location of each data value in the first set comprises accessing a mapping that correlates one or more first-set indices to one or more locations in the first digital signal for the one or more data values in the first set.

35. (new) An apparatus for convolving a first digital signal with a second digital signal, the apparatus comprises:  
means for providing the first and second digital signals, wherein:  
the first and second digital signals are audio processing signals;  
the first digital signal contains a first set of one or more data values and a second set of one or more data values; and  
the data values in the second set are all zero values;  
means for identifying a location in the first digital signal of each data value in the first set; and  
means for generating a convolution of the first and second digital signals as a sum of one or more multiplication products, wherein:  
each multiplication product is generated by multiplying a data value in the first set of the first digital signal by a corresponding data value of the second digital signal; and

13 for each multiplication product, the two data values are selected based on the identified  
14 location of the data value in the first set of the first digital signal.

1 36. (new) The invention of claim 35, wherein the means for generating the convolution is  
2 adapted to generate the convolution without selecting any data value in the second set of the first digital  
3 signal.

1 37. (new) The invention of claim 35, wherein the data values in the first set are all non-zero  
2 values.

1 38. (new) The invention of claim 35, wherein the convolution of the first and second digital  
2 signals is part of audio coding processing.

1 39. (new) The invention of claim 35, wherein the convolution of the first and second digital  
2 signals is part of audio decoding processing.

1 40. (new) The invention of claim 35, wherein the first digital signal is an excitation signal,  
2 the second digital signal is an impulse response, and the convolution corresponds to a residual signal.

1 41. (new) The invention of claim 35, wherein the means for identifying the location of each  
2 data value in the first set comprises means for accessing a mapping that correlates one or more first-set  
3 indices to one or more locations in the first digital signal for the one or more data values in the first set.

1 42. (new) An apparatus for convolving a first digital signal with a second digital signal, the  
2 apparatus adapted to:

3 provide the first and second digital signals, wherein:

4 the first and second digital signals are audio processing signals;

5 the first digital signal contains a first set of one or more data values and a second set of  
6 one or more data values; and

7 the data values in the second set are all zero values;

8 identify a location in the first digital signal of each data value in the first set; and

9 generate a convolution of the first and second digital signals as a sum of one or more  
10 multiplication products, wherein:

11 each multiplication product is generated by multiplying a data value in the first set of the  
12 first digital signal by a corresponding data value of the second digital signal; and

13 for each multiplication product, the two data values are selected based on the identified  
14 location of the data value in the first set of the first digital signal.

1 43. (new) The invention of claim 42, wherein the apparatus is adapted to generate the  
2 convolution is implemented without selecting any data value in the second set of the first digital signal.

1 44. (new) The invention of claim 42, wherein the data values in the first set are all non-zero  
2 values.

1 45. (new) The invention of claim 42, wherein the convolution of the first and second digital  
2 signals is part of audio coding processing.

1 46. (new) The invention of claim 45, wherein the apparatus comprises:

2 a generator adapted to generate the first digital signal; and

3 a convolution device adapted to convolve the first digital signal with the second digital signal.

1           47.     (new) The invention of claim 42, wherein the convolution of the first and second digital  
2 signals is part of audio decoding processing.

1           48.     (new) The invention of claim 47, wherein the apparatus comprises:  
2           a convolution device adapted to convolve the first digital signal with the second digital signal;  
3           and  
4           a speech processor adapted to process the convolved signal using a filter to generate a  
5 communication signal.

1           49.     (new) The invention of claim 42, wherein the first digital signal is an excitation signal,  
2 the second digital signal is an impulse response, and the convolution corresponds to a residual signal.

1           50.     (new) The invention of claim 42, wherein the apparatus is adapted to identify the  
2 location of each data value in the first set by accessing a mapping that correlates one or more first-set  
3 indices to one or more locations in the first digital signal for the one or more data values in the first set.